



Families of Functions

Student Activity

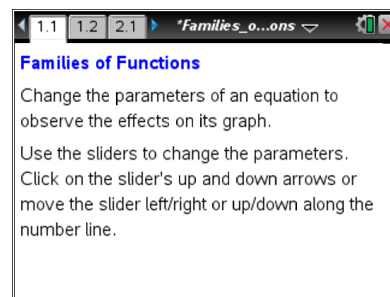


Name _____

Class _____

Open the TI-Nspire™ document *Families_of_Functions.tns*.

What effect does changing the parameters of an equation have on its graph? In this activity, you will explore the effects of changing the parameters one at a time.



Move to page 1.2.

Perform the following actions for each page in the TI-Nspire document, and then fill in the table below.

- Click the slider (up or down arrow) on each page to manipulate the variable **a**. Note what **a** does to the graphs of the functions on each page.
- Grab and drag the slider point **h** on each page to manipulate the variable **h**. Note what **h** does to the graphs of the functions on each page.
- Grab and drag the slider point **k** on each page to manipulate the variable **k**. Note what **k** does to the graphs of the functions on each page.

Page	Parent Function (Equation or Type)	Sketch of Parent Function	Effects of Parameter <i>a</i>	Effects of Parameter <i>h</i>	Effects of Parameter <i>k</i>
1.2					
2.1					
3.1					
4.1					
5.1					
6.1					
7.1					



1. Given any function, describe the effects parameter a has on its graph when:
 - a. $|a| > 1$
 - b. $0 < |a| < 1$
 - c. $a < 0$
 - d. $a = 0$
2. Given any function, describe the effects parameter h has on its graph when:
 - a. $h > 0$
 - b. $h < 0$
 - c. $h = 0$
3. Given any function, describe the effects parameter k has on its graph when:
 - a. $k > 0$
 - b. $k < 0$
 - c. $k = 0$
4. Given the following functions, describe the transformations on the parent function, $f(x)$.
 - a. $f(x) = x^2$; $h(x) = 3(x - 4)^2 + 2$
 - b. $f(x) = x^3$; $g(x) = -(x - 1)^3$
5. Given the following transformations, write the equation of the function.
 - a. The graph of $f(x) = \sqrt{x}$ is reflected over the x -axis, vertically stretched by a factor of 2, and translated vertically down 1 unit.
 - b. The graph of $f(x) = |x|$ is translated horizontally to the left 3 units and translated vertically up 5 units.